April 12, 2017

TO: EMC Mass Wasting Subcommittee
Drew Coe (EMC-CALFIRE), Dave Longstreth (CGS-Staff), Mike Fuller (CGS-Staff),
Dave Fowler (NCRWQCB-Staff), Ronna Bowers (CVRWQCB-Staff)

FROM: Matt O'Connor (EMC-Public)

SUBJECT: Mass Wasting Pilot Project Proposal Update

This memorandum reports on our conference call April 11 from 1:30 to 2:45. Dave Fowler and Ronna Bowers had prior commitments and could not participate; this call was scheduled on short notice in an effort to make substantial progress ahead of the April 20 EMC meeting.

Per prior email communications from me dated March 31 and considering input from the subcommittee and staff, the primary elements of the pilot project are expected to include the following:

1. Evaluating LiDAR as the primary landslide detection tool for a study
    a. Opportunity to compare 2006 and 2017 LiDAR at JDSF
    b. Opportunity to evaluate 2017 LiDAR as a detection tool
    c. Identification of deep-seated landslides and their influence on architecture of unstable terrain
2. Evaluating available data that can be used to develop sampling strata representing forest treatments and road construction/management as the primary analytical framework for a study
    a. JDSF THP's and management history
    b. Campbell Creek pilot study (2 yr study) developing data sets of this type
    c. Potentially available MRC THP and forest management unit data
3. Evaluating mitigation practices for unstable areas identified in THP's
    a. Uniformity/variability of identified unstable areas
    b. Uniformity/variability of mitigation practices (timber leave and buffer on unstable areas?)
    c. Preliminary observations of hillslope response to stressing storm events
        i. false negatives (slides that occur in harvest unit but not in identified unstable area)
        ii. ineffective mitigation (slides that occur in mitigated areas)

This provisional conceptual outline for the pilot project was used as the agenda for the phone conference.

Via prior e-mail, Ronna Bowers provided a list of factors supporting the suitability of the Green Diamond timberlands in northern California as a study area for the project. My prior review of Green Diamond's mass wasting studies supporting their Habitat Conservation Plan also supports that perspective. It is hoped that GD timberlands will be within the potential scope of the EMC mass wasting study; however, we believe that the initial focus of the pilot study will be in Mendocino County.

Following are the principal discussion items and next steps from the phone conference organized according to the provisional conceptual outline above.

Item 1-LiDAR

- Mike Fuller updated the status of the 2017 LiDAR acquisition for Mendocino County. The data have been collected except where snow cover remains, and processing is underway with expected delivery of work products in late 2017. He will provide GIS files depicting the coverage area.
- Dave Longstreth reviewed landslide mapping work at the Caspar Creek Experimental Watershed at Jackson Demonstration State Forest. LiDAR data are available from 2006, and a comprehensive landslide mapping project was recently completed for the South Fork Caspar Creek watershed. Landslide mapping has been conducted in North Fork Caspar Creek, but has not been reviewed and updated. This prior work and prior LiDAR coverage provides an opportunity to evaluate 2017 LiDAR regarding landslide detection limits using single-year LiDAR and the challenges and advantages of comparative analysis of 2006 and 2017 LiDAR data to detect landslides. Dave L. will prepare a preliminary conceptual task description for the pilot project regarding evaluation of LiDAR techniques in the Caspar Creek watershed.
- Mike Fuller will prepare a preliminary conceptual task description for the pilot project regarding digital techniques to compare LiDAR DEM's from different LiDAR acquisitions as an alternative and/or supplement to visual interpretation of LiDAR data to detect landslides.
- No discussion regarding the use of 2017 LiDAR to search for new landslides outside of JDSF, but an open question.

Item 2- Available data for forest/road management "treatment strata"

- Drew, Dave L. and Mike reviewed generally the extent of available data of this type for JDSF, confirming the likely suitability of JDSF for data exploration.
- They believe that similar types of data are likely to be assembled for the Campbell Creek pilot study; more is expected to be known relatively soon.
- Matt O'Connor is developing a project description as a means to introduce the study concepts to private commercial timberland managers with the intention of seeking their cooperation. Both MRC and Gualala River Timber are to be contacted.
- It is expected that some combination of the study areas and ownerships listed above will provide a sufficiently broad spectrum of land management history to evaluate potential treatment strata.
- Findings from a pilot investigation regarding treatment strata in Mendocino County would then be compared to similar information that may be available from other cooperating forest land managers to evaluate the potential for a broader regional study similar to the Washington DNR study of 2007 landslides.

Item 3- This topic was briefly discussed near the end of the teleconference.

- It was noted that preliminary efforts to evaluate mass wasting mitigation practices might require a study site where landslides have occurred in recently harvested areas. Don Lindsay (CGS-Redding) indicated in email some potentially suitable field areas outside the redwood region.
- This portion of the pilot study could conceivably be pursued without LiDAR availability.
- More detailed conceptualization is needed for this portion of the pilot study.

The preliminary concept for this pilot project proposal will be presented at the next EMC meeting on April 20. I would like to schedule another 1 hour conference call for next Tuesday if possible.